AU/ACSC/0602K/97-03

EXAMPLES OF AIRMINDEDNESS FROMAMERICA'S FIRST OPERATIONAL AIR CAMPAIGN: THE ST. MIHIEL OFFENSIVE, 1918

A Research Paper

Presented To

The Research Department

Air Command and Staff College

In Partial Fulfillment of the Graduation Requirements of ACSC

by

Maj Michael J. Taschner

March 1997

Disclaimer

The views expressed in this academic research paper are those of the author(s) and do not reflect the official policy or position of the US government or the Department of Defense.

Contents

Page

DISCLAIMER ii

PREFACE v

ABSTRACT vi

INTRODUCTION 1
- Purpose 1
- Organization 3

THE BATTLE OF ST. MIHIEL 4
- Preparation 4
- Execution 5

PRINCIPLES OF WAR 8
- Objective 8
  - Doctrine 8
  - St. Mihiel Examples 9
- Offensive 11
  - Doctrine 11
  - St. Mihiel Examples 11
- Unity of Command 12
  - Doctrine 12
  - St. Mihiel Examples 13
- Security 14
  - Doctrine 14
  - St. Mihiel Examples 15
- Surprise 15
  - Doctrine 16
  - St. Mihiel Examples 16
- Simplicity 17
  - Doctrine 17
  - St. Mihiel Examples 18
- Mass and Maneuver 18
  - Doctrine 19
  - St. Mihiel Examples 19

Economy of Force 21
Doctrine 21
St. Mihiel Examples 22

CONCLUSIONS 24

GLOSSARY 26

BIBLIOGRAPHY 27

Preface

The St. Mihiel offensive was unique. It was the first American led battle of World War I and involved the single largest collection of Allied airpower assembled during the war. Much of the literature on the St. Mihiel offensive is organized either chronologically or by functional specialty (pursuit, bombardment, observation aviation, etc.). This paper looks at the St. Mihiel offensive in terms of the principles of war from an airman's perspective (airmindedness as described in Air Force Manual (AFM) 1-1, Section D). The intent is to provide examples of the principles of war from this early air battle. The 1992 edition of AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*, contains many such examples. However, many of these examples are from the Second World War, Korean War, Vietnam War, or Operation Desert Storm. The history of aerial warfare is relatively short and many interesting examples of the correct application of the principles of war can be found in this first American led battle.

Abstract

This paper examines airpower in the Battle of St. Mihiel in terms of the principles of war and does so with an airmindedness perspective. The four day long air battle at St. Mihiel is briefly reviewed. Next, the nine principles of war described in the March 1992 edition of Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force* are reviewed and specific examples of their application during the St. Mihiel Offensive discussed. The principles: are objective, offensive, unity of command, security, surprise, simplicity, mass, maneuver, and economy of force.

World War I historical records and pilot memoirs were researched for details on the Allied planning and conduct of the air war at St. Mihiel. From this material, examples of the principles of war were taken. Although the principles of war are not immutable, examples of the principles of war (from an airmen's perspective) can be found in the first American led battle of World War I. These examples are as valid today as they were in September 1918.

Chapter 1

Introduction

Purpose

Much of the focus of studies at the United States Air Force (USAF) Air Command and Staff College (ACSC) is directed at examining the last war. Operation Desert Storm, in particular, has received considerable emphasis. The successful employment of a combined and joint coalition force was in large measure due to the correct application of the principles of war. Much of the literature on airpower in the Gulf War would lead one to believe we finally figured out how to correctly apply airpower. There are other success stories, however.

An interesting case study is the September 1918 St. Mihiel offensive. This American led battle is unique in that represents the first time a large, combined air force operating under the command of one individual was employed in concert with a ground offensive. Like Operation Desert Storm, its success was in large measure due to the correct application of the principles of war.

This paper looks at examples of the principles of war from an airmindedness perspective as demonstrated during the Battle of St. Mihiel. Although, the principles of war (as we know them today) were not yet incorporated into any kind of airpower

doctrine during the First World War, many principles of war were correctly applied in the St. Mihiel offensive. The principles of war may not be immutable, but a look at the American air combat experience from St. Mihiel to the present suggest they haven't changed much. While the complexity and cost of aerial warfare has increased greatly, the basic principles remain essentially the same. To reinforce the importance of the principles of war, this paper will present examples of the principles of war from the St. Mihiel offensive as they pertain to airpower. Like the tenets of airpower, the principles of war are important guidelines that both logic and experience indicate can be ignored only at considerable risk[1].

A brief history of the principles of war is in order. Principles of war were recorded as far back as Sun Tzu in 500 B.C. In the eighteenth and especially the nineteenth centuries, numerous authors developed their own principles of war. Contemporary versions of the principles of war were first presented by Colonel (Col) J.F.C. Fuller in 1916. His eight "strategic" principles were adopted by the British army in 1920 and, with the addition of the principle of simplicity, by the US Army in 1921. Various principles have been added and subtracted since then, and some principles have new names, however, today's list is essentially the 1921 US Army list. The nine principles of war are: objective, offensive, mass, economy of force, maneuver, unity of command, security, surprise, and simplicity. The discussion in essay U of Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, combines the principles of mass and maneuver in one discussion. This paper will also discuss the principles of mass and maneuver together.

Organization

Much of the literature on the St. Mihiel offensive is organized either chronologically (unit histories) or by aviation specialty (pursuit, bombardment, observation, etc.) or both. Documentation of the aerial offensive is quite good and will not be repeated here in great detail. Chapter 2 will capture the highlights of the aerial offensive only. Chapter 3 will briefly review each of the principles of war as described in the March 1992 version of Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, and the 1 February 1995 version of Joint Publication 3-0, *Doctrine for Joint Operations*. Following the discussion of each principle of war, specific airpower example(s) from the St. Mihiel offensive will be described. Examples from the St. Mihiel offensive will be described using modern terminology where applicable. Finally, Chapter 4 will provide concluding remarks and recommendation(s) for further research.

Notes

[1] AF/XOXWD, *Air Force Manual 1-1 Basic Aerospace Doctrine of the United States Air Force, Volume II*, March 1992.

Chapter 2

The Battle of St. Mihiel

This chapter briefly addresses the highlights of the Battle of St. Mihiel to provide a bigger picture of the offensive in terms of time and the contributions made by the various aviation specialties as the offensive was conducted. It is meant to be an overview. Specific details will be saved for the next chapter when the principles of war are discussed.

Preparation

In mid-August 1918 the American Air Service was a fledgling outfit consisting of an observation squadron, a half dozen corps observation squadrons, a day bombardment squadron, and fourteen pursuit squadrons. Additional American squadrons were in training and being equipped as rapidly as possible. In preparation for the attack on St. Mihiel, the French placed many squadrons under the control of the First Army Chief of Air Service, Col William Mitchell. The British also contributed a number of night bombing squadrons from the Royal Air Force (RAF) and the Italians supplied some bombardment aviation squadrons. For the upcoming attack on St. Mihiel, Col Mitchell had command of nearly 1500 coalition aircraft consisting of 701 pursuit aircraft, 366 observation aircraft, 323 day bombardment aircraft, and 91 night bombardment aircraft as well as 20 balloons.

It was the largest collection of airpower assembled for one operation during the entire war[1].

Considerable work was required to organize and connect all the Air Service units with each other as well with the various Army units (such as artillery). Wire, radio, courier, and aircraft drop-message grounds were used. Shelters had to be prepared in a very short amount of time for both American and French units.

Mitchell and his staff developed an air campaign plan consisting of four phases: preparation, night preceding the attack, day of the attack, and exploitation. A summary of the proposed attack was prepared for General Pershing on 20 August 1918. The four phases of the aerial offensive were designed to accomplish three tasks: provide accurate information to the infantry and artillery; establish air superiority; and attack enemy supply lines and troop movements.

Execution

The St. Mihiel offensive reduced the German held salient in four days, September 12 to 15. Weather was a major factor in the offensive, especially for air operations. High winds, low clouds, and heavy rain showers seriously degraded air operations for three of the four days and many of the planned day sorties had to be canceled. Several sorties that were attempted resulted in aborted takeoffs when muddy runway conditions resulted in broken propellers. Conversely, the weather at night was predominantly clear allowing many bombing missions to be executed.

For three days beginning on September 11th, Allied pursuit pilots conducted many missions they were not specifically trained for. When poor weather prohibited many two-

seat aircraft from getting airborne, pursuit pilots flew visual reconnaissance missions over enemy lines in support of friendly troops. On the first days of the offensive, much of the pursuit aviation was employed in a ground attack role. American and French pursuit pilots attacked enemy columns with small bombs and machine gun fire (strafe). As German pursuit aviation began appearing in greater numbers on the 14th of September, Allied pursuit aviation successfully engaged them in their usual role of aerial combat. Most of these engagements took place well behind enemy lines. Consequently, German pursuit aviation was not able to threaten Allied reconnaissance missions flown near the front lines.

Weather hampered Allied bombardment aviation on the first days of the offensive and many planned sorties had to be canceled. For those sorties that did get airborne, low clouds and winds made formation flying and accurate bombing difficult. The German Air Service tenaciously opposed Allied daylight strategic bombing with pursuit aviation (mainly large formations of Fokker D-VIIs) and inflicted heavy losses on some unescorted Allied bombing missions. Night bombing missions, in contrast, were very successful. The Royal Air Force (RAF) made nightly attacks on the towns of Longuyon, Conflans, Metz-Sablons, and on the railway line used by the Germans to bring up reserves. French and Italian night bombardment units also attacked these targets as well as command posts and troop concentrations closer to the front. Additionally, the French night bombardment group conducted night reconnaissance of German troop movements providing valuable intelligence information for the offensive. German bombers were also very active at night.

Observation aviation was seriously degraded by inclement weather during the first days of the offensive. However, some dedicated artillery surveillance, infantry contact

patrols, and long-range army reconnaissance sorties were launched during breaks in the weather. By the 14th of September the weather cleared sufficiently to conduct successful photographic missions. Allied observation aviation missions were essentially unopposed on the later days of the offensive as Allied pursuit aviation engaged and tied up German pursuit aviation far from the front lines.

Despite the inclement weather, the Air Service contributed to the success of the St. Mihiel offensive. The Air Service kept the staff informed in a timely manner and engaged enemy aircraft well behind enemy lines whenever possible. The enemy's rear areas were observed and bombed causing considerable confusion. Airpower did not win the battle by itself, but the synergy created by its use in conjunction with the ground offensive, greatly contributed to the number enemy prisoners of war captured.

Notes

[1] Toulmin, H. A. Jr., *Air Service, American Expeditionary Force*, 1918, New York, D. Van Nostrand Company, 1927.

Chapter 3

Principles of War

The airmen's interpretations of the principles of war reflect the range, speed, and unique capabilities of airpower. Harnessing this capability requires a distinctive perspective and expertise termed airmindedness by Gen Henry H. Arnold[1]. Each of the principles of war will first be described and then reinforced with specific airmindedness example(s) from the St. Mihiel offensive.

Objective

> *...I assembled the officers from every major organization of the Air Service within our great force—British, French, Italians, and Americans. I read them the orders myself and asked each one individually what he could do to comply with them. Each one went back to his organization thoroughly conversant with what he was to do for each day of the attack.*
>
> —Col William Mitchell

Doctrine

The purpose of the objective is to direct every military operation toward a clearly defined, decisive, and attainable objective. The objective of combat operations is the destruction of the enemy armed forces' capabilities and will to fight. Objectives must directly, quickly, and economically contribute to the purpose of the operation. Each operation must contribute to strategic objectives[2].

The objective is always important, especially with employment of airpower because of the range of options available. Airpower is not constrained to achieving tactical objectives as a prerequisite to obtaining strategic objectives. Airpower can be employed in high-leverage strategic operations in independent campaigns or may be applied at the operational and tactical levels against enemy military forces in a joint or combined theater campaign. Given sufficient superiority in numbers relative to the enemy, all three types of operations may be pursued simultaneously[1,3].

St. Mihiel Examples

During August 1918, Col Mitchell and his staff prepared the details of AEF's proposed employment in the upcoming St. Mihiel offensive. Airpower had three tasks to accomplish in the St. Mihiel offensive: first, to provide accurate information for the infantry and adjustment of fire for the artillery of the ground troops; second, to hold off the enemy air forces from interfering with either our air or ground troops; and third, to bomb the back areas so as to stop the supplies for the enemy and hold up any movement along his roads. Mitchell divided airpower's contribution to the offensive into four phases: preparation, night preceding the attack, day of the attack, and exploitation. Objectives (missions) for each phase of the attack were assigned to the applicable aviation specialties (pursuit, bombardment, observation, etc.).

During the first phase (preparation) , the general mission of aviation was to absolutely prevent enemy reconnaissance aviation access to friendly lines while securing complete information about hostile formations by means of photo missions and night reconnaissances *without* arousing the suspicion of the enemy. Specifically, the mission of pursuit aviation was defensive counter air (DCA) over friendly lines to produce an

absolute barrage as well as normal level of offensive counter air (OCA) over enemy lines to maintain the usual activity of the sector. The mission of bombardment aviation was the normal work of the sector. Finally, the mission of observation aviation was maximum photographic reconnaissance and night reconnaissance (when enemy movements were suspected).

During the second phase (night preceding the attack), bombardment aviation's objective was the destruction of airfields, stations, railroad crossings, bridges, and ammunition dumps by high-explosive bombs (RAF) as well as the general attack of personnel, cantonments, and airfields (French aviation).

During the third phase (day of the attack), the mission of pursuit aviation was two fold. The offensive pursuit mission was to conduct OCA deep within enemy airspace by breaking up enemy aerial formations and protecting bombardment aviation. The defensive pursuit mission was close air support (CAS) against enemy reserves in formation for counterattack (if infantry signaling was efficient enough to identify friendly troops from enemy troops), and to conduct DCA over the battlefield. Additionally, they were to help the advance of tanks. The mission of bombardment aviation was to conduct OCA (attack and destroy enemy airfields) and battlefield air interdiction (BAI). BAI targets included, trains, stations, convoys, railroad crossings, ammunition dumps, cantonments, etc. The mission of observation aviation was surveillance, artillery adjustments, liaison and reconnaissance.

In the final phase of the attack (exploitation), squadrons were to move forward to previously prepared advance fields and execute the same missions as the day before. Additionally, they were to exploit a retreating army by flying as low as possible and

destroying enemy columns with bombs and machine guns. The high-explosive bombardment aviation was tasked with the strategic attack (SA) of railway crossings and important bridges far from the battlefield.

The objectives were clear, concise, and contributed directly to the success of the offensive. The numerical superiority of the AEF allowed them to simultaneously conduct strategic operations (using the RAF and French Air Division) and operational and tactical joint and combined operations (using the French and American Air Services).

Offensive

We were constantly forcing them to fight in the air...

—Col William Mitchell

Doctrine

Offensive action allows friendly forces to act rather than react, and to dictate the time, place, purpose, scope, intensity, and tempo of operations. The purpose of an offensive action is to seize, retain, and exploit the initiative. Airpower is inherently offensive. Aggressive defeat of the enemy's air force is the airmen's first priority and makes all other operations possible. The importance of offensive action is fundamentally true across all levels of war.

St. Mihiel Examples

Air attacks on German transportation trains, railroads, and columns (on roads) made a hasty German retreat impossible. As a result, several thousand German troops were taken prisoner and much equipment was captured by allied infantry. The Germans could not afford such losses and by the 13th of September, began concentrating as much

airpower as they could gather. Allied airpower forced the Germans to attempt to match their strength in the air or possibly lose the towns of Metz, Conflans, Diedenhoffen and Treves through continued allied bombing[4]. The RAF, under General Trenchard, attacked German airfields, forcing them to fight in the air or face complete destruction on the ground. By the 14th of September, the German Air Service began to appear in great numbers and many aerial combats occurred. Engagements typically took place over enemy territory well away from the action on the ground. As a result, the German Air Service was never able to threaten allied ground troops. Offensive allied airpower seized, retained, and exploited the initiative. They were able to achieve freedom of action and force the Germans to react rather act.

Unity of Command

> *It would be a great advantage to have all air forces—American, British, French and Italian—under one command, as we could put the mass of our aviation where it was most needed at once, instead of having to bicker about it for days.*
>
> —Col William Mitchell

Doctrine

The purpose of unity of command is to ensure unity of effort under one responsible commander for every objective. Unity of command means that all forces operate under a single commander with the requisite authority to direct all forces employed in pursuit of a common purpose. Unity of effort, however, requires coordination and cooperation among all forces toward a commonly recognized objective, although they are not necessarily part of the same command structure. Airpower is the product of multiple capabilities. Centralized command and control is the key to fusing these capabilities.

St. Mihiel Examples

As First American Army Chief of Air Service, Col Mitchell recognized the need for centralized control of offensive air operations at St. Mihiel. He requested all air missions of American Army units, French units attached to the American Army, the French Air Division, and the French Night Bombardment Wing be assigned to him for execution. By concentrating the nearly 1500 allied aircraft directly supporting the St. Mihiel offensive, Col Mitchell achieved both mass and unity of effort and pioneered the centralized control of airpower[5].

During the offensive, Col Mitchell maintained a theater-wide view of the battlefield and was able to sequence air actions for maximum effect. He used barrage patrols (combat air patrols to accomplish DCA) in the preparation phase to ensure local air superiority over friendly lines in order to hide Allied preparations from German reconnaissance aircraft. Similarly, his instructions to pursuit aircraft and bombardment aviation to maintain normal activity during the preparation phase helped the Allies gain surprise as to the actual place and time of the offensive. Since Col Mitchell could not possibly attack every target desired by the ground commanders on the night preceding the attack, he focused on critical operational level targets such as enemy airfields, railway stations, ammunition dumps, and enemy cantonments. The last minute attack of these keys nodes inflicted temporary paralysis among the German forces. Allied air and ground forces exploited the confusion during the following morning's attack.

Unity of effort, however, requires coordination and cooperation among all forces toward a commonly recognized objective(s). Just prior to the attack (September 11th), Col Mitchell assembled officers from every major organization within the Air Service

coalition and personally read them the orders. He then asked each officer individually what they could do to comply with them. Each one returned to his unit thoroughly familiar with the plan. At St. Mihiel, unity of command was unique because it had never been tried before and the AEF had no previous experience in handling an air service of any size.

Security

> *We were careful not to make too great a display over the front; but on the other hand, we kept our pursuit patrols working up as high as they could go, about twenty thousand feet, so as to prevent German reconnaissance.*
>
> —Col William Mitchell

Doctrine

The purpose of security is to never permit the enemy to acquire unexpected advantage. Security enhances freedom of action by reducing friendly vulnerability to hostile acts, influence, or surprise. Security results from the measures taken by commanders to protect their forces. Staff planning and an understanding of enemy strategy, tactics, and doctrine will enhance security. Risk is inherent in military operations. Application of this principle includes prudent risk management, not undue caution. Protecting the force increases friendly combat power and preserves freedom of action. The lethality of airpower makes the security of friendly forces from enemy air attack a paramount concern. Security may require the elimination of the enemy's airpower.

St. Mihiel Examples

Security of Allied airpower at St. Mihiel was achieved by secretly assembling the air forces quickly just prior to the offensive. Forward operating airfields were prepared prior to deployment with dummy buildings. When it came time to actually deploy aircraft to the field, the dummy buildings were removed at night and replaced with real buildings. All deployments were planned to occur at night, and with one exception, conducted at night. A misunderstanding resulted in one deployment occurring in broad daylight and compromised the operations at Souilly airfield.

The British used a similar scheme for their Handley-Page airfields. They built two airfields in close proximity to one another—a real one, and a dummy one. The dummy airfield had dummy buildings and a couple aircraft. The aircraft were moved around periodically to give the impression of activity. At night, when German bombing missions took place, all equipment was safely moved into nearby forests.

During the battle, security was provided indirectly to observation aviation and ground troops by the large numbers of friendly aircraft involved in the battle. Enemy pursuit aviation was totally engaged deep within their territory by friendly airpower. Consequently, friendly observation aircraft and ground troops were left relatively untouched.

Surprise

> *In order that the attack be made by surprise, it is important that the attitude of the sector be not changed.*
>
> —Col William Mitchell

Doctrine

The purpose of surprise is to strike the enemy at a time or place or in a manner for which it is unprepared. Surprise can help the commander shift the balance of combat power and thus achieve success well out of proportion to the effort expended. Factors contributing to surprise include speed in decision making, information sharing, and force movement; effective intelligence; deception; application of unexpected combat power; operations security (OPSEC); and variations in tactics and methods of operation[2]. Surprise depends on initiative and is more achievable with airpower's versatility. Where, when, or how an enemy is struck is relatively independent of where and how air forces are postured. Compared to land and sea forces, terrain and distance are not inhibiting factors for air forces. Choice of time and place always rests with the commander of superior airpower. Surprise is airpower's strongest advantage.

St. Mihiel Examples

At St. Mihiel, surprise was achieved in several ways. During the preparation phase, deliberate measures were taken to keep the number of aircraft being assembled for the offensive a secret. Units were deployed to the area in a small time span, so the Germans miscalculated by two or three days the exact time of the offensive. Prior to the attack, friendly aerial activity over enemy territory was kept as close to normal as possible so as not to tip off the enemy. Finally, attacks were planned to hit the enemy ground forces from the front and then from behind.

Units deploying to forward airfields in support of the offensive were flown in at a low altitude along prescribed routes and timed their arrival just prior to dark. The airplanes were hangared immediately after landing. The hangars were constructed shortly before

the units arrived and replaced previously erected deception hangars. With one exception, all units complied with these orders and the Germans never observed the true size of the Allied Air Force during the preparation phase.

Other measures were taken to keep the size of the Allied Air Force a secret. During the preparation phase, combat air patrol (CAP) missions were flown continuously at high altitude over friendly lines to prevent enemy reconnaissance of friendly lines. The missions were successful and the German reconnaissance attempts failed to uncover the size of the Allied preparations.

The result of the Allied efforts to maintain secrecy during the preparation phase was complete control of the air for the first three days of the offensive. The Germans were unable to predict the exact time of the offensive and were taken by surprise. While the major ground operations took place, German mobilization was too slow to meet the Allied attack. The Germans were able to mass pursuit aircraft on the last days of the offensive, but by then the major objectives on the ground had already been accomplished.

Simplicity

> *I always kept an officer at my headquarters, whose name I shall not mention, whom I read all the orders. If he could understand them, anybody could.*
>
> —Col William Mitchell

Doctrine

The purpose of simplicity is to prepare clear, uncomplicated plans and concise orders to ensure thorough understanding. Simplicity contributes to successful operations. Simple plans and clear, concise orders minimize misunderstanding and confusion. When

other factors are equal, the simplest plan is preferable. Simplicity in plans allows better understanding and execution planning at all echelons. Simplicity and clarity of expression greatly facilitate mission execution in the stress, fatigue, and other complexities of modern combat and are especially critical to success in combined operations[2]. The many missions airpower can accomplish places a premium on unambiguous orders to get the most from each mission.

St. Mihiel Examples

A good example of simplicity in communication was related by Col Mitchell in his memoirs. When he was commanding, he always wrote the military orders for his fighting units and personally checked that his orders were sent to and received by the unit commander. When orders were not obeyed, it was usually because the orders had not been delivered or were so poorly written they were misunderstood. To prevent the latter from happening, Col Mitchell kept an officer at his headquarters that he read all his orders to. If that officer could understand the orders, anybody could.

As mentioned earlier, just prior to the attack (September 11th), Col Mitchell assembled officers from every major organization within the Air Service coalition and personally read them the orders. He then asked each officer individually what they could do to comply with them. Each one returned to his unit thoroughly familiar with the plan.

Mass and Maneuver

> *I estimated that within three days after we attacked, the Germans could concentrate very nearly two thousand airplanes against us. I therefore decided to assemble a force of two thousand to cover our initial attack...*
>
> —Col William Mitchell

Doctrine

Normally mass and maneuver are treated as separate principles of war. However, air forces can maneuver quickly in three dimensions and achieve mass faster than surface forces. When mass and maneuver are employed simultaneously, airpower can create tremendous leverage against surface forces. Mass allows the concentration of combat power at the decisive time and place. Maneuver places the enemy in a position of disadvantage through the flexible application of combat power. Maneuver is the movement of friendly forces in relation to the enemy to secure or retain positional advantage, usually in order to deliver (or threaten delivery of) ordnance. Effective maneuver keeps the enemy off balance, preserves freedom of action, and reduces friendly vulnerability by continually posing new problems for the enemy.

St. Mihiel Examples

Col Mitchell was concerned about the ability of the Germans to concentrate additional airpower after the St. Mihiel offensive started[6]. In preparation for the offensive, he assembled a coalition air force of nearly 1,500 aircraft and twenty balloons from American, French, British and Italian units all under his command. Thirty thousand officers and enlisted men were required to handle the aircraft on fourteen main flying fields and numerous substations. It was the greatest concentration of airpower in the First World War and the first time in history an air force cooperated with an army according to a broad strategical plan.

Mass and maneuver were used to accomplish an air interdiction campaign in a novel way. Anticipating it would take at least two days for the Germans to concentrate their air force, Col Mitchell planned to maneuver two large masses of aircraft in concert to bomb

the enemy's rear areas to stop the flow of supplies and to hold up any movement along his roads. Mass (brigade size) attacks were to take place from different directions and be staggered in time (one mass would attack targets from the right side of the salient followed by an attack on the same targets by a second mass coming in from the left side of the salient). The French Air Division was ordered to prosecute the attacks by nothing smaller than brigades. Two brigades of about four hundred aircraft each made up the French Air Division. Due to the inclement weather and maintenance problems, not all the planned sorties got airborne. About 65 percent of the aircraft could be kept flying.

The large mass of Allied aircraft overwhelmed the German Air Service. By the 14th of September, the Germans were able to begin massing pursuit aircraft and Allied pursuit pilots devoted most of their time to air combat. The Germans were still heavily outnumbered even after reinforcements. Enemy pursuit fought persistently and tenaciously in an effort to cover the German retreat. However, they rarely succeeded in approaching the front lines to attack any friendly observation aircraft. They did, however, inflict heavy casualties on our day bombardment aircraft[7].

The Allies where able to mass the effects of airpower against ground forces on an operational level. The Germans, on the other hand, effectively employed mass and maneuver against Allied bombardment aircraft at a tactical level. An excellent example of mass and maneuver (on the part of the Germans) occurred on the 14th of September. A French bombardment squadron consisting of 18 aircraft took off on an assigned mission to bomb the city of Conflans (behind German lines). Of the 18 bombardment aircraft, 15 were two-seat aircraft and three were three-seat aircraft. The three-seat aircraft were the most heavily armed aircraft on the western front, each equipped with six guns. However,

compared to pursuit aircraft, they were not very maneuverable. The squadron flew in a V-formation with a three-seater on each flank and one in the opening behind the V. Due to poor weather conditions, the bombardment squadron was unable to rejoin with assigned protective pursuit aircraft and continued to the target unescorted. While enroute, the formation was engaged by twelve German pursuit aircraft. The trailing three-seater was attacked by four enemy aircraft and shot down. While exiting the target area, the bombardment squadron was engaged by two additional enemy pursuit squadrons. For a total of forty minutes, the French squadron was totally defensive as the ubiquitous maneuverable German aircraft tore into their sluggish formation from all directions and at ranges as close as fifty feet. By the time they reached the protection of friendly airspace, only five (heavily damaged) bombardment aircraft remained. The rest had all been shot down at the cost of three German pursuit aircraft lost and one damaged.

Mitchell learned from this disaster that unescorted bombers (regardless of firepower) were no match for highly maneuverable fighters. During the Argonne-Meuse offensive later that month, bombardment aircraft always flew with pursuit escort[8]. Unfortunately, this lesson from the First World War had to be relearned, at an even greater cost, in the Second World War.

Economy of Force

Doctrine

Economy of force is the creation of usable mass by expending minimum combat power on secondary objectives. It involves efficiency—making the fullest use all forces available by judicious employment and distribution of assets. It is the measured allocation

of available combat power to such tasks as limited attacks, defense, delays, deception, or even retrograde operations in order to achieve mass elsewhere at the decisive point and time. This principle was well developed prior to WWI and the advent of airpower. It describes the greatest vulnerability of airpower—the temptation to apportion forces to satisfy many requesters simultaneously. Misuse of airpower can reduce its contribution more than enemy action. Because airpower is valuable, it must be controlled by competent airmen.

St. Mihiel Examples

Even though the Allied airpower assembled for the St. Mihiel offensive was the largest collection in the First World War, examples of economy of force can be found. Some observation units (24th Squadron and 9th Night Reconnaissance Squadron) lacked proficiency and were held back from participating to any great extent. Pilots and observers with three months experience over the local terrain (from the 91st Squadron) did the majority of the observation work. This was a sound decision as two of the three observation aircraft lost during the offensive were inexperienced teams from the 24th Squadron. Given the unfavorable weather conditions initially, and the increased enemy resistance later, a greater tasking for inexperienced units would most likely have resulted in unnecessary higher losses. The relatively small number of observation flights flown (compared to the number planned) was sufficient to supply the General Staff with information on the enemy. Valuable aircraft and crew were saved for another day.

Another example of economy of force involved the use of aircraft unfit for service over enemy lines. These observation aircraft were held in reserve to carry out liaison missions between the observation airdrome and the 1st Army dropping ground located

near Ligny-en-Barrois rather than risk losing them to superior German Fokker D-VII aircraft on observation missions over enemy lines[7].

Notes

[1] AF/XOXWD, *Air Force Manual 1-1 Basic Aerospace Doctrine of the United States Air Force, Volume II*, March 1992.

[2] Joint Warfighting Center, Doctrine Division, Joint Publication 3-0, *Doctrine for Joint Operations*, 1 February 1995.

[3] AF/XOXWD, *Air Force Manual 1-1 Basic Aerospace Doctrine of the United States Air Force, Volume I*, March 1992.

[4] Mitchell, William B., *Memoirs of World War I*, New York, Random House, 1956 [1928].

[5] HQ USAF/XOXD, *Joint Force Air Component Commander Primer*, Second Edition, February 1994.

[6] Maurer, Maurer, *The U.S. Air Service in World War I, Volume III, The Battle of St. Mihiel*, The Office of Air Force History, Headquarters USAF, Washington, 1979.

[7] Maurer, Maurer, *The U.S. Air Service in World War I, Volume I, The Final Report and a Tactical History*, The Office of Air Force History, Headquarters USAF, Washington, 1978.

[8] Morrow, John H., Jr., *The Great War in the Air: Military Aviation from 1909 to 1921*, Smithsonian Institution Press, 1993.

Chapter 4

Conclusions

The American led St. Mihiel offensive contains many good examples of the principles of war. From an airmen's perspective, it's interesting to look back and see many successful applications of the principles of war in this first big air battle. Undoubtedly, many of the principles, such as objective, offensive, unity of command, security and mass were consciously employed. The others were clearly present.

Specific examples from the St. Mihiel offensive were used to reinforce the importance of the principles of war. Beginning with clearly defined objectives, personally briefed to officers from each unit, the air attack was designed to be very offensive. A large coalition air force was assembled under the command of one individual—Col William Mitchell. Deliberate security measures were used to quickly assemble the air force without arousing enemy suspicion to achieve the element of surprise. Orders were simple and attainable. On an operational level, the massive assembly of Allied airpower overwhelmed the German Air Service and made valuable contributions to the ground offensive. On a tactical level, the Germans were able to successfully employ large formations of maneuverable fighter aircraft against unescorted bombers (on the last days of the battle). Valuable aircrew and aircraft were not wasted when it was obvious they were too inexperienced or totally outclassed, respectively.

An area for further research would be why American airmen, in spite of the costly lesson learned at St. Mihiel, endorsed daylight strategic bombing by unescorted bombers. Col Mitchell realized the mistake and didn't repeat if during the Argonne-Meuse offensive later in September 1918. Yet it was the best the United States Army Air Corp could come up with at the beginning of World War II. It's difficult to understand why a strategy that didn't work in the previous war was advocated.

Several success stories were presented from an air battle waged against an enemy with a credible air force. This "get back to basics" case study hopefully underscores the importance of the correct application principles of war. Operation Desert Storm introduced new levels of enemy models, sophisticated weaponry, and parallel attack options. Its tempting to focus attention on these latest developments as the new way of doing business and to forget about the time tested fundamental truths of airpower. The St. Mihiel offensive contains many good examples of the way airpower has been successfully employed since the dawn of airpower.

Glossary

ACSC	Air Command and Staff College
AEF	American Expeditionary Forces
AU	Air University
BAI	Battlefield Air Interdiction
CAP	Combat Air Patrol
CAS	Close Air Support
Col	Colonel
DCA	Defensive Counter Air
Gen	General
OCA	Offensive Counter Air
RAF	Royal Air Force
USA	United States Army
USAF	United States Air Force

Bibliography

AF/XOXWD, *Air Force Manual 1-1 Basic Aerospace Doctrine of the United States Air Force, Volume I*, March 1992.

AF/XOXWD, *Air Force Manual 1-1 Basic Aerospace Doctrine of the United States Air Force, Volume II*, March 1992.

Air University. *Air University Style Guide for Writers and Editors,* 1996, n.p. On-line. Internet, 4 November 1996. Available from http://www.au.af.mil/au/rco/style/.

The Chicago Manual of Style. 14th ed. Chicago: The University of Chicago Press, 1993.

HQ USAF/XOXD, *Joint Force Air Component Commander Primer*, Second Edition, February 1994.

Joint Warfighting Center, Doctrine Division, Joint Publication 3-0, *Doctrine for Joint Operations*, 1 February 1995.

Maurer, Maurer, *The U.S. Air Service in World War I, Volume III, The Battle of St. Mihiel*, The Office of Air Force History, Headquarters USAF, Washington, 1979.

Maurer, Maurer, *The U.S. Air Service in World War I, Volume I, The Final Report and A Tactical History*, The Office of Air Force History, Headquarters USAF, Washington, 1978.

Mitchell, William B., *Memoirs of World War I*, New York, Random House, 1956 [1928].

Morrow, John H., Jr., *The Great War in the Air: Military Aviation from 1909 to 1921*, Smithsonian Institution Press, 1993.

Toulmin, H.A. Jr., *Air Service, American Expeditionary Force, 1918*, New York, D. Van Nostrand Company, 1927.

DISTRIBUTION A:

Approved for public release; distribution is unlimited.

Air Command and Staff College
Maxwell AFB, Al 36112